UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,369	12/19/2001	Peter Henry Tu	RD-29312	7699

41838   7590   01/12/2005

GENERAL ELECTRIC COMPANY (PCPI)
C/O FLETCHER YODER
P. O. BOX 692289
HOUSTON, TX 77269-2289

EXAMINER
DASTOURI, MEHRDAD

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/683,369	TU ET AL.
	Examiner	Art Unit	
	Mehrdad Dastouri	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
    closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
    application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date *January 23, 2002*.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Arman et

al. (Model-Based Object Recognition in Dense-Range).

Regarding Claim 1, Arman et al. disclose a method for identifying images of laser

stripes projected onto the surface of an object in a non-contact gauge measurement

system, comprising:

projecting one or more laser stripes onto a surface of an the object (Figures 2(a)

and 2(b); Page 9, Section 2.1.1, first Paragraph);

obtaining an image of said projected laser stripes (Figures 2(a) and 2(b); Page 9,

Section 2.1.1, first Paragraph);

generating a matched filter for each pixel in said image (Figure 4; Pages 12-14,

Section 3.);

filtering said image with said generated matched filter (Figure 4; Pages 12-14,

Section 3.); and

identifying the center of said projected laser stripes in said filtered image (Figures

2-4; Pages 9-14; Sections 2.1.1 through 3.).

Regarding Claim 2, Arman et al. further disclose the method of Claim 1 for identifying images of laser stripes wherein the step of generating a matched filter for each pixel in said image includes the step of

calculating:

$$v(i, j) = \Sigma \, (image(r) \times Gaussian(r))$$

for each pixel (i,j) in said image, wherein image(r) is the image intensity value for a point on a curve R that emanates from pixel (i,j), and is always tangential to the flow field (Figure 12; Pages 32-37, Appendices A and B, in particular Formulas (B.23.a) through (B.23.e) and (B.25.a) through (B.25.e)).

Regarding Claim 3, Arman et al. further disclose the method of Claim 2 for identifying images of laser stripes wherein the step of generating a matched filter for each pixel in said image includes the step of calculating:

$$t(i, j) = \Sigma \, (v(p) \times Gaussian(p))$$

for each pixel (i,j) in said image, wherein P is a curve that emanates from pixel (i,j), and is always perpendicular to the flow field (Figure 12; Pages 32-37, Appendices A and B, in particular Formulas (B.23.a) through (B.23.e) and (B.25.a) through (B.25.e)).

Regarding Claim 4, Arman et al. further disclose the method of Claim 3 for identifying images of laser stripes wherein the step of identifying the center of said projected laser stripes in said filtered image includes, for each raster line in said image, identifying pixels where t(i, j) is a local maximum with respect to said raster line (Pages 12-14; Section 3.; Appendices A and B).

Regarding Claim 5, Arman et al. further disclose the method of Claim 1 for identifying images of laser stripes wherein the step of generating a matched filter for each pixel in said image calculates a two-dimensional matched filter for each pixel in said image (Page 12-14; Section 3., Gaussian smoothing).

Regarding Claim 6, Arman et al. further disclose the method of Claim 1 for identifying images of laser stripes wherein the step of generating a matched filter for each pixel in said image includes calculating a first one-dimensional filter for each pixel and calculating a second one-dimensional filter for each pixel (Page 12-14; Section 3., Gaussian smoothing; Appendices A and B)

Regarding Claim 7, Arman et al. further disclose the method of Claim 6 for identifying images of laser stripes wherein said first and second one-dimensional filters are each separable Gaussian filters (Figure 12; Page 12-14; Section 3., Gaussian smoothing; Appendices A and B).

Regarding Claim 8, Arman et al. further disclose the method of Claim 6 for identifying images of laser stripes wherein said first and second one-dimensional filters are each separable non-Gaussian filters (Page 13; Section 3., Median filtering (Hoffman and Jain); Appendices A and B).

Other prior art cited

3.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 6,754,398 to Yamada;

U.S. Patent 6,829,371 to Nichani et al.

Contact Information

4.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mehrdad Dastouri whose telephone number is (703) 305-2438. The examiner can normally be reached on Monday to Friday from 8:00 a.m. to 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mehrdad Dastouri
Primary Examiner
Art Unit 2623
January 8, 2005

Contact Information

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Mehrdad Dastouri whose telephone number is (703)

305-2438. The examiner can normally be reached on Monday to Friday from 8:00 a.m.

to 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Mehrdad Dastouri
Primary examiner
Art Unit 2623
January 8, 2005

MEHRDAD DASTOURI
PRIMARY EXAMINER